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upon as the emanation of a Will existing above the universe." This can hardly be looked upon as a compliment to the Deity.

The work is published in two editions (German and English), and is accompanied by nine exquisite plates, with 144 colored figures.

It is not a little curious that throughout the work the English translator uniformly uses 'colour' and 'coloured,' but 'coloration.' Is this to meet Americans half-way?

SOCIETIES AND ACADEMIES.

MEETING OF THE OHIO STATE ACADEMY OF SCIENCE.

THE seventh annual meeting of the Ohio State Academy of Science was held at the Ohio State University, Columbus, Ohio, on December 28 and 29, 1897, Dr. W. A. Kellerman, of Columbus, presiding. The meeting was well attended and much interest was manifested. The Society now numbers about two hundred, twenty names being presented for membership at this meeting.

The first paper, by R. J. Webb, was on 'The Fertilization of the Closed Gentian.'

Dr. D. S. Kellicott reported on Additions to the Odonato of Ohio. The list of dragon-flies for the State now numbers ninety-seven.

E. W. Vickers gave three short papers on 'The Pileated Woodpecker in Mahoning County,' 'Pickering's Hylodes in Ohio' and 'The Least Weasel in Ohio.'

Edo Claassen reported briefly on the following subjects: 'Occurrence of the Long-leaved Willow,' 'Abnormalities in Plants,' 'List of Liverworts of Cuyahoga and other Counties of Northern Ohio,' 'List of Plants New to the Flora of Ohio' and 'Erratic Boulders in the Valley of Rocky River.'

Dr. W. A. Kellerman gave the President's address on the subject: 'Does Modern Science furnish an Adequate Philosophy of Human Life?' and besides reported on the 'Distribution of the Green Ash in Ohio,' '*Ustilago reiliana*, Spermatophyta rare or new to the Ohio Flora' and 'Revision of the Catalogue of Ohio Plants.'

Professor F. M. Webster spoke on Some additions to the known insect fauna of Ohio.

R. C. Osburn and E. B. Williamson gave a description of a new species of fish, *Etheostama sciottense* Osburn and Williamson, a full description of which will appear in the Proceedings of the Society. They also gave a list of 69 species of fish for Franklin county, Ohio, and a list of the Crayfish of Ohio.

J. H. Shaffner read papers on 'Atavism in *Citrullus vulgaris*,' 'Notes on the Salt Marsh Plants of Northern Kansas' and 'Observations on the nutation of *Helianthus annuus*.'

Other papers were:

Notes on the Pleistocene geology in the vicinity of Devil's Lake, Wis., and dynamical modifications of quartzite: J. A. BOWNOCKER.

Science for the first year of the high school course, and Additions to the list of Ohio Fungi: F. L. STEVENS.

Science in the country school: E. E. MASTERMAN.

Cell-division in the Pine: E. L. FULLMER.

Embryology of a dicotyl: MISS L. C. RIDDLE.

Dissection of a double Trillium: MRS. W. A. KELLERMAN.

Additions to the list of plants of Ohio; Reversion of leaves to laments in tick-trefoil, and Evidence as to the origin of the islands of Lake Erie: E. L. MOSELEY.

The junction of the blue and yellow clays in the drift of northern Ohio, and recent beaches at Sandusky Bay and Sodus Bay: A. A. WRIGHT.

A list of the butterflies of Ohio (ninety-seven in number): J. S. HINE.

The Jonathan Creek drainage basin: H. J. DAVIS.

The preglacial drainage of Knox county: W. G. TIGHT.

Preglacial drainage in the vicinity of Cincinnati; The Ohio River a result of glacial conditions, and No evidence of an ice dam at Cincinnati: GERARD FOWKE.

Some new points on fin attachment of *Dinichthys* and *Cladodus*: WM. CLARK.

Four critical points in the valley of the Cuyahoga River: E. W. CLAYPOLE.

The following officers were elected for the ensuing year:

President—W. G. Tight, Granville.

Vice-Presidents—Josua Lindahl, Cincinnati; J. H. Todd, Wooster.

Secretary—E. L. Moseley, Sandusky.

Treasurer—D. S. Kellicott, Columbus.

Executive Committee—Mary E. Hart, Oxford; E. W. Vickers, Ellsworth.

Member of Publication Committee—Dr. S. Belle Craver, Toledo.

RAYMOND OSBURN,
Press Reporter.

THE WISCONSIN ACADEMY OF SCIENCES,
ARTS AND LETTERS.

THE Academy held its 28th annual meeting at Milwaukee, December 27th–29th. The following were the principal scientific papers presented:

Reports of officers and other general business, 9:00 to 9:30 o'clock.

Reading of papers, 9:30 o'clock.

'Report on the progress of the Geological and Natural History Survey of Wisconsin,' Professor C. Dwight Marsh, President of the Academy, and Professor E. A. Birge, Director of the Survey.

'The Fresh-water Sponges of St. Louis Bay,' Mr. N. A. Harvey.

'The Relation of Motives to Freedom,' Professor E. H. Merrell.

'The Duration of School Attendance in Chicago and Milwaukee,' Professor Daniel Fulcomer.

'On the Meaning and Function of Thought-connective,' Professor E. T. Owen.

'The Psychology of the Sense of Injury,' W. F. Becker, M.D.

'The Succession-period of Generations,' Professor Chas. H. Chandler.

'On the Relation of Joints to the Forces which produce them,' Professor C. R. Van Hise.

'The Origin of Conglomerates,' Professor G. L. Collie.

'Notes on the Itasca Basin,' Mr. F. E. Lurton.

'On a plan to gather Information Concerning Wisconsin Diamonds,' Professor Wm. H. Hobbs.

'Recent Investigations to Determine the Relation of Crystal Forms to Chemical Composition,' Professor Wm. H. Hobbs.

'Observations of Nature and People in Eastern Siberia,' Isidor Ladoff.

'Observations on the Nocturnal Flight of Migrating Birds,' Dr. O. G. Libby.

'Unsteady Motion in Capillary Tubes,' Mr. H. C. Wolf.

'Theoretical Investigation of Motion of Ground-waters,' Professor C. S. Slichter.

'Pressures within a Heterogeneous Spheroid,' Professor C. S. Slichter.

'Recent Developments in the Electro-magnetic Theory of Light,' J. E. Davies.

'The Action of Dilute Solutions of Electrolytes on the Sense of Taste,' Dr. Louis Kahlenberg.

'Several Nitrogen addition products of Caryophyllene,' Professor Edward Kremers.

'A New Model of the Lobule of the Lung,' Professor W. S. Miller.

'A Study of the Variation in the Bileducts of the Cat,' Professor W. S. Miller.

In regard to the State Survey, Professor Marsh referred to the fact that \$5,000 had been appropriated by the Legislature for each of two years, which was sufficient to pay the actual expenses incurred, while Professor Birge gave his services as Director free. Mr. E. R. Buckley is preparing a report on building stone, and Mr. Samuel Weidman on the geology of the vicinity of Merrill. Seven bulletins will be published during the coming year by the Survey, but that rate of publication cannot be maintained on the present revenue, since the Commission is availing itself of a large amount of work already done by individuals.

Professor Van Hise spoke at some length, following Professor Slichter's second paper, which the latter had worked out in response to geological queries. Professor Van Hise gave it as his conviction that vulcanism and the increasing heterogeneity of the earth had been by far the greater causes of the folding of the strata, and that computations concerned with the secular cooling of the earth were of slight value from a geological point of view.

A. S. FLINT.

Secretary.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 477th meeting was held Saturday evening, January 8th.

Mr. J. E. Watkins presented a paper on 'The Transportation and Lifting of Heavy Bodies by the Ancient Engineers.' The purpose of the paper was to show how many of the structures regarded as remarkable by expert engineers of the present day, and which some archaeologists declare must have required in their erection the use of immense machines, could have been constructed by primitive tools and simple methods.

By means of diagrams the speaker explained how inclined planes of earth, etc., could be used in placing in position stone blocks or slabs of enormous weight, levels and pry-bars being

employed in setting them up. He then demonstrated how easily, comparatively speaking, the Pyramids could have been constructed by these simple methods, and when completed the earth around them which had been used for the inclined planes filled into the pits from which it was taken, leaving the ground as level as before.

As an illustration the Pyramid of Gizeh was cited, some of the stones of which were transported a distance of five hundred miles. In this case the highest embankment necessary when the workmen reached the top course, assuming that a 20% grade was adopted, would have been 750 yards long, containing, as it did, some seven and a half million cubic yards, provided the sides of the embankment would stand at an angle of 30°, which is not at all improbable. A force of ten thousand men could have built such an embankment in a single twelve-month, a very small part of the total labor which it is stated called for the services of one hundred thousand men for twenty years.

In the solution of the problem of putting in place huge monoliths it was suggested that the modern engineer could well consider the utilization of inclined planes before adopting a more complex method.

The second paper was by Dr. T. J. J. See, of the Lowell Observatory, on 'Recent Discoveries of Double Stars in the Southern Hemisphere.' He recalled the climatic studies which led Mr. Lowell to locate the Observatory at Flagstaff, Arizona, and stated that what is needed now is not better telescopes, but better atmosphere. Since August, 1, 1896, he has been engaged on an extensive campaign for the discovery and measurement of double stars. Some 100,000 stars between -15° and -45° of declination had been examined and about 1,000 systems measured. He announced that he had forwarded to the *Astronomical Journal* a catalogue of 500 new double stars, many of which are of the highest interest.

The third paper was by Mr. C. D. Walcott, on the United States Forestry Reserve, which will be published in full in the *Popular Science Monthly*.

E. D. PRESTON,
Secretary.

GEOLOGICAL SOCIETY OF WASHINGTON.

At the meeting of the Geological Society, of Washington, held on January 12, 1898, Mr. C. Whitman Cross, of the United States Geological Survey, read a paper on 'The Geological vs. the Petrographical Classification of Rocks.' This paper was an argument in favor of distinguishing between the systematic classification of rocks as concrete objects, in accordance with which they are described and named, *i. e.*, the petrographical classification, and the geological classifications necessary from several points of view. Many of the latter arrangements, such as that expressing genetic relationships of igneous rocks, are based on theory or hypothesis and produce instability if introduced into the systematic classification. It was urged that neither geological occurrence nor genetic relations should be used in sub-classification of igneous rocks. This paper will soon be published in full in the *Journal of Geology*, Chicago.

Arthur C. Spencer read a paper on 'The Upper Cretaceous Section in Southwestern Colorado.' For the purposes of geological mapping in southern Colorado it has been found necessary to subdivide the Upper Cretaceous section in a manner differing from that of common usage in the Rocky Mountain area. The Dakota occurs with its usual characters. Above it comes a series of shales, known to embrace the Benton, Niobrara and a part of the Pierre, which cannot be divided on lithologic grounds. The fossil-bearing layers are not persistent or numerous enough to serve as guides in areal mapping.

The upper part of the section has not received detailed examination. It consists of massive sandstones in which both the Fox Hills equivalent and that of the Laramie may prove to be present. This sandstone is overlain by the Animas beds, which are probably equivalent to the Denver beds of the Denver Basin.

W. F. MORSELL.

U. S. GEOLOGICAL SURVEY.

THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of the Academy of Science of St. Louis on the evening of January 3, 1898, nineteen persons present, the following officers for 1898 were installed: President, Edmund

A. Engler; Vice-Presidents, Robert Moore and D. S. H. Smith; Recording Secretary, William Trelease; Corresponding Secretary, Joseph Grindon; Treasurer, Enno Sander; Librarian, Gustav Hambach; Curators, Gustav Hambach, Julius Hurter; Directors, M. H. Post, Amand Ravold.

Dr. Amand Ravold spoke informally of formaldehyde gas as a disinfectant, and exhibited several forms of apparatus adapted to its use. It was stated that, although in confined spaces the gas has proved an effective disinfectant, which has the merit of not injuring the most delicate fabrics or polished metal surfaces, its germicide action in dwelling rooms has thus far proved less satisfactory than that of sulphur dioxide and chlorine, so far as it has been tested by the Health Department of the City of St. Louis; so that, as yet, the Health Department has not found it possible to employ it as a substitute for the older and in some respects more objectionable disinfectants.

Two persons were proposed for active membership in the Academy.

WILLIAM TRELEASE.

SCIENTIFIC JOURNALS.

The American Geologist, January. Several important changes are to be adopted by this journal during the coming year. Professor N. H. WINCHELL is now the editor-in-chief, and there are eleven associate editors. A new department has been added, which is not covered by any other geological journal. This is a monthly authors' catalogue of American geological literature. Besides forming a part of the regular magazine, it is proposed to issue this catalogue on separate sheets for the benefit of librarians and investigators. The undertaking seems a very commendable one, and will form a valuable index. In the present number G. K. GILBERT gives a sketch of the life and works of the late Joseph F. James, with a portrait. N. H. WINCHELL elucidates the determination of the feldspars in a manner which will be found of much service to petrologists. The Pittsburg Coal Bed, one of the richest mineral deposits in the eastern United States, is described by I. C. WHITE, in respect to its age, area and

structure. The drilling for petroleum has shown that the coal area belonging to this bed is much smaller than has been estimated. The reviews of recent geological literature, personal and scientific news, and correspondence, are a feature of the magazine as heretofore.

American Chemical Journal, January. 'On Salts of Nitroparaffins and Acylated Derivatives of Hydroxylamine,' L. W. JONES. 'The Action of the Halogenes on the Aliphatic Amines and the Preparation of their Perhalides,' J. F. NORRIS: A comparison of the action of bromide and iodine and the formation of a number of perhalides containing one or more halides. 'On Acyl Imido Esters,' H. L. WHEELER, P. T. WALDEN and H. F. METCALF. 'Notes on Double Salts of the Analides, with Cuprous Chloride and Cuprous Bromide,' W. J. COMSTOCK.

J. ELLIOTT GILPIN.

NEW BOOKS.

Lehrbuch der vergleichenden mikroskopischen Anatomie der Wirbeltiere. ALBERT OPPEL. Jena, Gustav Fischer. 1897. 2d part. Pp. viii+682. M. 20.

Die Farnkräuter der Erde. H. CHRIST. Jena, Gustav Fischer. 1897. Pp. xii+388. M. 12.

L'électro Chimie. AD. MINET. Paris, Gauthier Villars et Fils. 1897. Pp. 167. 2 fr. 50 c.

Transactions of the Congress of American Physicians and Surgeons, 4th Triennial Session. New Haven, Conn., Published by the Congress. Pp. liv+310.

Ethnological Studies Among the Northwest Central Greenland Aborigines. WALTER E. ROTH. Brisbane and London, Government Printer. 1897. Pp. xvi+199 and 23 plates.

Dissection of the Ophidian. DAVID S. KELLCOTT. Columbus, O. 1898. Pp. 72.

The Psychology of Suggestion. BORIS SIDIS. With an introduction by WILLIAM JAMES. New York, D. Appleton & Co. 1898. Pp. x+386. \$1.75.

Evolutional Ethics and Animal Psychology. E. P. EVANS. New York, D. Appleton & Co. 1898. Pp. 386. \$1.75.